

## **An annotated catalogue of the primary type specimens of the Orthoptera (Insecta) species described by Johann Carl and Adolf Fritze.**

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**An annotated catalogue of the primary type specimens of the Orthoptera (Insecta) species described by Johann Carl and Adolf Fritze.** - Name-bearing types of seventy three species-group names of Orthoptera described by Carl and Fritze are deposited in the Muséum d'histoire naturelle de Genève. The names are listed alphabetically, and the sex, label data and condition of the specimens is given, along with their location within the collections, and the current nomenclatural combination.

**Keywords:** Orthoptera - type material - Carl - Fritze - Geneva - Catalogue.

### INTRODUCTION

Johann Carl (1877-1944, also known as Jean Carl) joined the Arthropod department of the Musée d'histoire naturelle (now the Muséum d'histoire naturelle de la Ville de Genève or MHNG) as the junior assistant of Emil Frey-Gessner in 1900. Carl went on to become senior assistant and eventually deputy director of the museum, continuing the work of Henri de Saussure on Orthoptera, Diplopoda and Crustacea, and becoming a pioneer in the study of the Collembola. The career of Adolf Fritze (1860-1927), Carl's predecessor as Frey-Gessner's assistant, ended on a less happy note. After a short time in Geneva he moved back to his native Germany becoming curator of natural history and then deputy director of the museum in Hanover, and then director of the zoological gardens of that city. After many difficulties, due to the First World War and political instability following it, the zoo was forced to close in 1922.

Between them, Carl and Fritze described 74 species or subspecies of Orthoptera. The MHNG collection holds primary types of 73 of these, the exception being the sub-species *Decticus verrucivorus deliae* described by Fritze in 1918, when he was working in Hanover.

Carl normally gave the number of individuals on which his description was based. In the collection he usually labelled one specimen of each gender (if both were available) as a type and in some cases the other specimens as cotypes, but since these distinctions are not made explicit in the descriptions, all specimens are considered syntypes, unless he only had a single individual, or a lectotype has subsequently been designated.

## ARRANGEMENT AND FORMAT

The species are listed alphabetically. The format for each is:

*species name* Author, work: page [*Original generic placement*].

Number of specimens. Specimen: "Label data" [format of label]. Following the recommendations of Ohl & Oswald (2004) the condition of each specimen is noted, although damage to the tips of the antennae (especially in the Ensifera) or wear to wing margins is not enumerated. Other comments. Location of material in the MHNG main Orthoptera collection.

Currently valid binomen of taxon (according to OSF).

The abbreviation OSF refers to *Orthoptera Species File Online* (Eades & Otte, 2009).

## CATALOGUE

*acutipennis* Carl, 1908a: 144 [*Phisis*].

Lectotype ♀ (designated by Jin & Kevan 1992: 66) with labels: "Java 621 16" [printed on yellow paper]; "Theutras spec. nov." [handwritten on yellow paper]; "specimen no. 2" [typewritten on white card]; "Lectotypus" [printed on red card]. The specimen is set with wings folded; it has lost the left front leg, the right middle and hind legs are detached, and most of the left antenna is missing. The two other females from the type series are present in the collection. Box F24.

*Carliphisis acutipennis* (Carl, 1908).

*annulifera* Carl, 1914a: 544 [*Trachyzulpha*].

Holotype ♂ with labels: "Tonkin, ach. Baudet" [printed on white paper]; "Trachyzulpha annulifera Carl, type" [handwritten on yellow paper]; "Holotypus" [printed on red card]. The specimen is set with wings spread; the right hind leg is detached and lacks the tarsi. Images on OSF. Box B11.

*Trachyzulpha annulifera* Carl, 1914.

*atrata* Carl, 1914b: 542 [*Elimaea*].

Holotype ♂ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Elimaea atrata, ♂ type" [handwritten on yellow paper]; "Holotypus" [printed on red card]. The specimen is set with the left wings spread and right wings folded; it has lost the tarsi of the front legs and the right middle leg, most of the left middle leg and most of the antennae. Images on OSF. Box B6.

*Elimaea atrata* Carl, 1914.

*bilineatus* Carl, 1916: 483 [*Parahieroglyphus*].

Lectotype ♂ (designated by Mason 1973: 548) with labels: "Indes orient., Mr H. de Saussure" [printed on a strip of white paper]; "Parahieroglyphus bilineatus Carl" [handwritten on yellow paper]; "Type" [printed on pink card]; "Parahieroglyphus bilineatus Carl, 1916 = P. bilineatus Bol. 1912, Lectotypus, J.B. Mason det. 1969" [determination handwritten on white card with Mason's name and date printed]. The

other 12 ♂ and 12 ♀ specimens from the type series mentioned in the description are present. Box Z19.

A junior synonym of *Parahieroglyphus bilineatus* Bolivar, 1912.

***bimaculata*** Carl, 1914a: 167 [*Sikoriella*].

Two ♂ and four ♀ syntypes. A ♂ with labels: "Saussure, Madagasc." [printed on white paper]; "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with wings spread; it lacks the tarsi of the right front and right back legs. A ♂ with labels: "Saussure, Madagasc." [printed on white paper]; "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right front leg and most of the left antenna are missing. A ♀ with labels: "Saussure, Madagasc." [printed on white paper]; "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the tibia and tarsi of the left middle leg and the tarsi of the right middle leg are missing, as is most of the left antenna. Six eggs are glued to a card on the pin. A ♀ with labels: "Saussure, Madagasc." [printed on white paper]; "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen has the wings folded. A ♀ with labels: "H. de Saussure, Madagascar" [printed on white paper]; "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen has the wings folded; the right hind leg is detached. A ♀ with labels: "Sikoriella bimaculata Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen has the wings folded; the tarsi of both middle legs are lost. Four eggs are glued to a card on the pin. According to the original description Carl had six female syntypes and it is not clear where the other two are deposited. Images on OSF. Box B21b.

*Sikoriella bimaculata* Carl, 1914.

***biolleyi*** Carl, 1916: 504 [*Munatia*].

Lectotype ♂ (designated by Rowell, 1998: 40) with labels: "Munatia biolleyi Carl" [handwritten on green paper]; "Munatia biolleyi Carl ♂, Hololectotypus [*sic*] C.S. Carbonell 1966" [handwritten on red card]. The species name label in the box has "Costa-Rica" written in the bottom left corner. This specimen is set with wings spread. The other ♂ and the ♀ from the type series mentioned in the description are present. Images on OSF. Box Z3.

*Munatia biolleyi* Carl, 1916.

***brachypterus*** Carl, 1916: 485 [*Teratodes*].

Holotype ♀ with labels: "Teratodes brachypterus Carl" [handwritten on yellow paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. Box Z49.

*Teratodes brachypterus* Carl, 1916.

*brevicornis* Carl, 1916: 498 [*Thisiocentrus*].

Lectotype ♂ (designated by Dirsh, 1962: 321) with labels: "Madagasc, Annanarive" [printed on pink card]; "Thisiocentrus brevicornis Carl" [handwritten on pink paper]; "♂, vermutlich = Thisiocentrus sikorai I. Bol., Ramme det." [determination handwritten on white card with Ramme's name printed]; "Thisiocentrus brevicornis Carl. Type! = Heteracris sikorai (I. Bol.), V.M. Dirsh det. 1958" [determination handwritten on white card with Dirsh's name and the date printed]; "Type" [printed on card disc with red margin]; "Lectotypus" [printed on red card]. This specimen is set with the left wings spread and the right wings folded; it lacks the right hind leg and the right antenna. The other ♂ and 12 ♀ specimens from the type series mentioned in the description are present. Box Z75.

A junior synonym of *Heteracris sikorai* (Bolivar, 1914).

*coelebs* Carl, 1914a: 164 [*Cosmozoma*].

Holotype ♂ with labels: "Madagascar, Elliot" [printed on green card]; "Cosmozoma coelebs Carl ♂" [hand written on pink paper]; "Holotypus" [printed on red card]. The specimen is set with wings spread; the tibia and tarsi of the left middle leg are missing, as are the antennae. The terminalia are also missing. Images on OSF. Box B21b.

*Conchotopoda coelebs* (Carl, 1914).

*cuisinieri* Carl, 1914b: 553 [*Holochlora*].

Holotype ♂ with labels: "Tonkin, Cuisinier" [handwritten on yellow paper]; "Holochlora cuisinieri Carl, ♂ type" [handwritten on yellow paper]; "Holotypus" [printed on red card]. The specimen is set with the left wings spread and right wings folded; it has lost the tarsi of both front legs and the left middle leg, both hind legs are detached and most of the left antenna is missing. Images on OSF. Box B17.

*Holochlora cuisinieri* Carl, 1914.

*cuisinieri* Carl, 1916: 461 [*Tapesia*].

Holotype ♀ with labels: "Konakry" [handwritten on a strip of white paper]; "Tapesia cuisinieri Carl" [handwritten on pink paper]; "Type det. D.K.McE. Kevan 195-" [handwritten designation on printed white card]; "Holotypus" [printed on red card]. Despite being brachypterous, the specimen is set with the left forewing spread; the left middle leg is lost. Box X16.

*Dictyophorus cuisinieri* (Carl, 1916).

*decorata* Carl, 1916: 506 [*Munatia*].

Lectotype ♂ (designated by Rowell, 1998: 29) with labels: "843 Carrillo alt. 600m, Cariblanco, Sarapiqui, P. Biolley" [handwritten on white paper]; "Munatia decorata Carl ♂" [handwritten on green paper]; "Munatia decorata Carl ♂, Hololotypus [*sic*] C.S. Carbonell 1966" [Handwritten on red card]. This specimen is set with the left wings spread and right wings folded; the tips of both antennae are missing. The second ♂ from the type series mentioned in the original description is present. Images on OSF. Box Z3.

A junior synonym of *Munatia punctata* Stål, 1875.

*decoratus* Carl, 1916: 487 [*Tonkinacris*].

One ♂ and three ♀ syntypes. A ♂ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "*Tonkinacris vittatus* Carl" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. Despite being brachypterous, this specimen is set with the left wings spread; the right front leg and right antenna are missing. A ♀ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "*Tonkinacris vittatus* Carl" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. Despite being brachypterous, this specimen is set with the left wings spread; The left front leg and the left middle tarsi are missing, as is the right antenna. A ♀ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "*Tonkinacris vittatus* Carl" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen lacks the left front tibia and tarsi, and the right antenna. A ♀ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "*Tonkinacris vittatus* Carl" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This species was placed in the collection under the name "*vittatus* Carl", but the specimens correspond to the published description of *T. decoratus* Carl. Box Z51.

*Tonkinacris decoratus* Carl, 1916.

*dispar* Carl, 1914a: 175 [*WattenwylIELla*].

One ♂ and one ♀ syntype. A ♂ with labels: "Antongil, Madagascar, Brunner det" [handwritten on white card]; "*WattenwylIELla dispar* Carl, ♂ type" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the left hind leg is detached and most of both antennae is missing. A ♀ with labels: "Antongil, Madagascar, Brunner det" [handwritten on white card]; "*WattenwylIELla dispar* Carl, ♀ type" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; most of both antennae is missing. Images on OSF. Box E31.

*WattenwylIELla dispar* Carl, 1914.

*elongata* Fritze in Carl, 1908b: 304 [*Gryllacris*].

Holotype ♀ with labels: "Borneo" [printed on a strip of white card]; "G. elongata Fritze = G. nigripennis Gst. ssp. elongata F., Borneo coll. Morton, type!" [handwritten on white card]; "08" [handwritten on white disc of paper]; "Holotypus" [printed on red card]. The specimen is set with the left wings spread and right wings folded; the left front leg and both middle legs have lost the tarsi and most of the left antenna is missing. Box N3.

*Gryllacris elongata* Fritze in Carl, 1908.

*exigua* Carl, 1916: 766 [*Racilia*].

Eleven ♂ and four ♀ syntypes. A ♂ with labels: "Java" [printed on strip of yellow card]; "*Racilia exigua* Carl" [handwritten on yellow paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen has lost the left middle leg and both antennae. A ♂ with labels: "Java" [printed on strip of yellow card]; "*Racilia exigua* Carl" [handwritten on yellow paper]; "Syntypus" [printed on red

paper]. A ♂ with labels: “Java” [printed on strip of yellow card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. A ♂ with labels: “Java” [printed on strip of yellow card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost the left middle leg. A ♂ with labels: “Java” [printed on strip of yellow card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is rather faded and has lost the left middle leg. A ♂ with labels: “Java orient. Montes Tengger, 4000’ 1890 H. Fruhstorfer” [printed on blue card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. A ♂ with labels: “Java orient. Montes Tengger, 4000’ 1890 H. Fruhstorfer” [printed on blue card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost both hind legs and both antennae. A ♂ with labels: “Java orient. Montes Tengger, 4000’ 1890 H. Fruhstorfer” [printed on blue card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost the right middle leg tarsi and the left antenna. A ♂ with labels: “Java or., Pasoeroean, 622 20” [printed on yellow paper]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen lacks the left middle leg. A ♂ with labels: “Java or., Pasoeroean, 622 20” [printed on yellow paper]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost the left middle leg, both hind legs and the right middle tarsi. A ♂ with labels: “Tengger Geb., Ost-Java” [printed on white paper]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “*Racilia exigua* Carl” [handwritten on white card with a black margin]; “Cotype” [printed in red on white card with a red margin]; “ex coll. Nadig -exotica” [printed on white paper]; “Syntypus” [printed on red paper]. A ♀ with labels: “Java” [printed on strip of yellow card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. A ♀ with labels: “Java” [printed on strip of yellow card]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen lacks the tarsi of the right hind leg. A ♀ with labels: “Tengger Geb., Ost-Java” [printed on white paper]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. A ♀ with labels: “Tengger Geb., Ost-Java” [printed on white paper]; “*Racilia exigua* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost most of both antennae. In addition there are three detached legs glued to a card on a separate pin. The original description states that there was a twelfth ♂ in the type series, it is not clear where this is deposited. Box Z19.

*Racilidea exigua* (Carl, 1916).

*femorata* Carl, 1914a: 135 [*Sphyrometopa*].

Holotype ♀ with label: “Holotypus” [printed on red card]. The single specimen standing under this name has lost the original labels, but the correspondence of the measurements makes it certain that this is the holotype. The species name label in the box has “Amérique cent.” written in the bottom left corner (the description states that the specimen was from Costa Rica). The specimen has lost the right middle leg tarsi and the left antenna. Images on OSF. Box F3.

*Sphyrometopa femorata* Carl, 1914.

*foreli* Carl, 1921: 305 [*Nastonotus*].

One ♂ and four ♀ syntypes. A ♂ with labels: "St Cruz près St Martha, Dr A. Forel" [handwritten on white paper]; "Bilastes spec" [handwritten on green paper]; "♂ Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with wings spread; it has lost the tarsi of the right hind leg. The cerci have been detached, and are glued to a card on the pin. A ♀ with labels: "St Cruz près St Martha" [handwriting of Forel on white paper]; "Nastonotus foreli Carl" [handwritten on white paper]; "Cotype ♀" [printed on white card]; "Syntypus" [printed on red paper]. This specimen is set with wings spread. A ♀ with labels: "St Cruz près St Martha, Dr Forel" [handwritten on white card]; "Bilastes spec" [handwritten of green paper]; "Nastonotus foreli Carl" [handwritten on white card]; "Cotype ♀" [printed on white card]; "Syntypus" [printed on red paper]. This specimen is set with wings folded. A ♀ with labels: "St Cruz près St Martha, Dr Forel" [handwritten on white card]; "Nastonotus foreli Carl" [handwritten on white paper]; "Type ♀" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with wings roughly folded; the tarsi and part of the tibia of the right middle leg are missing. A ♀ with labels: "St Cruz près St Martha, Dr Forel" [handwritten on white card]; "Bilastes spec" [handwritten on green paper]; "Nastonotus foreli Carl" [hand written on white card]; "Cotype ♀" [printed on white card]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the right hind leg is missing. Images on OSF. Box E24.

*Nastonotus foreli* Carl, 1921.

*forficulata* Carl, 1921: 308 [*Nicephora*].

Holotype ♂ with labels: "Ceylan, Dr Bugnion" [handwritten in pencil on white paper]; "Nicephora forficulata Carl, ♂ type" [handwritten on white paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The specimen lacks the right hind leg. Images on OSF. Box C1.

*Nicephora forficulata* Carl, 1921.

*fraternus* Carl, 1916: 514 [*Dichroplus*].

Four ♀ syntypes. A ♀ with labels: "Minas Geraës, Brasil 1897, ex coll. Fruhstorfer" [printed on green paper]; "Dichroplus fraternus Carl type" [handwritten on green paper]; "Dichropus fraternus Carl. Holotypus" [Carbonell's handwriting on red card]. This specimen lacks the right antenna. A ♀ with labels: "Minas Geraës, Brasil 1897, ex coll. Fruhstorfer" [printed on green paper]; "Dichropius fraternus Carl cotype" [handwritten on green paper]; "Dichroplus fraternus Carl. Paratypus CSC-1966" [Carbonell's handwriting on red card]. Despite being brachypterous, this specimen is set with the left wings spread. A ♀ with labels: "Minas Geraës, Brasil 1897, ex coll. Fruhstorfer" [printed on green paper]; "Dichroplus fraternus Carl cotype" [handwritten on green paper]; "Dichroplus fraternus Carl. Paratypus CSC-1966" [Carbonell's handwriting on red card]. The antennae of this specimen are lost. A ♀ with labels: "Minas Geraës, Brasil 1897, ex coll. Fruhstorfer" [printed on green paper]; "Dichroplus fraternus Carl cotype" [handwritten on green paper]; "Dichroplus fraternus Carl. Paratypus CSC-1966" [Carbonell's handwriting on red card]. This

specimen lacks the left front tarsi and the right front tibia and tarsi as well as the antennae. Images on OSF. Box Z65.

*Digamacris fraternus* (Carl, 1916).

*fruhstorferi* Carl, 1914b: 550 [*Holochlora*].

Two ♂ syntypes. A ♂ with labels: “Than-Moi, Tonkin, 2-3000’, IV.V, H.Rolle, Berlin SWH” [printed on white card]; “*Holochlora fruhstorferi* Carl, ♂ type” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has the wings folded, and has lost most of both antennae. A ♂ with labels: “Than-Moi, Tonkin, 2-3000’, IV.V, H.Rolle, Berlin SWH” [printed on white card]; “*Holochlora fruhstorferi* Carl, ♂ type” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has the wings folded, and has lost part of the right middle tibia and the entire right hind tibia, as well as most of both antennae. Images on OSF. Box B16.

*Holochlora fruhstorferi* Carl, 1914.

*fusca* Fritze, 1899: 340 [*Capnoptera*].

Holotype ♀ with labels: “Borneo, C. Pictet” [handwritten on yellow paper]; “*Capnoptera fusca* Fritze type” [handwritten on yellow paper]; “*Typhoptera unicolor* Br.v.W. ♀, det. C. de Jong 1938” [determination handwritten on white card with de Jong’s name and date printed]; “Holotypus” [printed on red card]. The specimen is set with the left wings spread and right wings folded; the right front leg is detached and glued to a card on the pin, most of the left antenna is lost. Images on OSF. Box E13.

A junior synonym of *Typhoptera unicolor* (Brunner von Wattenwyl, 1895).

*gracilis* Fritze, 1899: 338 [*Gelastorhinus*].

One ♂ and one ♀ syntype. A ♂ with labels: “Deli, Sumatra, C. Pictet” [printed on yellow paper]; “*Gelastorhinus gracilis* Fritze (Type!)” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is set with the right wings spread and left wings folded; the right hind leg is missing. A ♀ with labels: “Deli, Sumatra, C. Pictet” [printed on yellow paper]; “*Gelastorhinus gracilis* Fritze (Type!)” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has lost the right antenna. Box U7.

A junior synonym of *Gonista bicolor* (de Haan, 1842).

*incongruens* Carl, 1916: 465 [*Orthacris*].

Holotype ♂ with labels: “*Orthacris incongruens* Carl, ♂ type, Indes” [handwritten on yellow paper]; “Holotypus” [printed on red card]. The specimen has lost both antennae and the right front leg; the left front and middle legs lack the tarsi. Box X6.

*Orthacris incongruens* Carl, 1916.

*insularis* Carl, 1908a: 147 [*Paralistroscelis*].

One ♂ and six ♀ specimens, one detached ♂ abdomen and one detached head and prothorax, all syntypes. A ♂ with labels: “Madagasc. Sikora” [printed on pink paper]; “*Paralistroscelis insularis* Carl det. P. Naskrecki 2002” [handwritten on white paper]; “Syntypus” [printed on red paper]. This specimen is set with wings spread; the



tarsi of the left front leg are missing, as is the right antenna. A ♀ with labels: "Madagasc. Sikora" [printed on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded. A ♀ with labels: "Saussure, Madagasc." [printed on white paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded. A ♀ with labels: "Madagasc. Sikora" [printed on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the claw of the right hind leg is missing. A ♀ with labels: "H. de Saussure, Madagascar" [printed on white paper]; "bri Loc. [?] ♀" [handwritten in pencil on scrap of printed text]; "Syntypus" [printed on red paper]. This specimen is set with wings folded. A ♀ with labels: "918 ♀" [handwritten on white paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the abdomen is lost except for the ovipositor which is glued to a card on the pin. A ♀ with label: "Syntypus" [printed on red paper]. This specimen is set with wings folded; the tarsi of the left front leg are lost. Images on OSF. Box F25.

A junior synonym of *Paralistroscelis listrosceloides* (Karny, 1907).

*invidus* Carl, 1916: 507 [*Diponthus*].

Two ♂ and three ♀ syntypes. A ♂ with labels: "Bresil" [printed on a strip of green paper]; "CSC 1144" [handwritten on a strip of white card]; "Diponthus invidus Carl" [handwritten on green paper]; "Diponthus invidus Carl ♂, Hololecotypus [*sic*] C.S. Carbonell 1966" [Carbonell's handwriting on red paper]. This specimen is set with the right wings spread and left wings folded; the right hind leg is missing, as are the tarsi of the left front leg and most of the right antenna. A micro-tube containing dissected parts and a strip of card with "1144" written on it is present on the pin. A ♂ with labels: "Bresil" [printed on a strip of green paper]; "CSC 1140" [handwritten on a strip of white card]; "Diponthus invidus Carl" [handwritten on green paper]; "Diponthus invidus Carl ♂, Paratypus, C.S.C. 1966" [Carbonell's handwriting on red paper]. This specimen is set with wings folded; most of both left wings are lost and the abdomen shows damage by museum beetle. A micro-tube containing dissected parts and a strip of card with "1140" written on it is present on the pin. A ♀ with labels: "S. Catherina, Theresopolis, Fruhstorfer 1888" [printed on white paper]; "Diponthus invidus Carl" [handwritten on green paper]; "Diponthus invidus Carl, Allolectotypus [*sic*] ♀, C.S. Carbonell 1966" [Carbonell's handwriting on red paper]. This specimen is set with wings spread. A ♀ with labels: "S. Catherina, Theresopolis, Fruhstorfer 1888" [printed on white paper]; "Diponthus invidus Carl" [handwritten on green paper]; "Diponthus invidus Carl, Paratypus, C.S.C./ 1966" [Carbonell's handwriting on red paper]. This specimen is set with wings folded. A ♀ with labels: "Uruguay" [printed on a strip of green paper]; "Diponthus invidus Carl" [handwritten on green paper]; "Diponthus invidus Carl, Paratypus, C.S.C./ 1966" [Carbonell's handwriting on red paper]. This specimen is set with the left wings spread and right wings folded; the left front leg and most of the left antenna are missing. Images on OSF. Box Z15.

*Diponthus invidus* Carl, 1916.

*jucundus* Carl, 1916: 496 [*Thisiocentrus*].

Two ♂ and six ♀ syntypes. A ♂ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus"

[printed on red paper]. This specimen is set with wings folded; the left front leg is missing, as is the tarsi of the right front leg. A ♂ with label: "Syntypus" [printed on red paper]. This specimen is set with wings spread; the right hind leg is detached. A ♀ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings spread. A ♀ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the left front leg lacks the tarsi. A ♀ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; most of both antennae is missing. A ♀ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the left middle leg tarsi and the left antenna are missing. A ♀ with labels: "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded; the left front leg is missing, as is the claw of the left middle leg. A ♀ with labels: "Cap b. Esp., Peringuey" [printed on pink card]; "Thisiocentrus jucundus Carl" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with wings folded. Box Z75.

*Heteracris jucundus* (Carl, 1916).

*laticollis* Carl, 1914a: 173 [*Phyrama*].

One ♂ and ♀ one syntype. A ♂ with labels: "H. de Saussure, Madagascar" [printed on white paper]; "Phyrama laticollis Carl ♂ type" [handwritten on pink paper]; "Type" [printed on pink card]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right hind leg is missing and the left hind leg lacks the tarsi. A ♀ with labels: "Saussure, Madagasc." [printed on white paper]; "Phyrama laticollis Carl ♀ type" [handwritten on pink paper]; "Syntypus" [printed on red paper]. This specimen is set with the right wings spread and left wings folded; most of the right middle leg is lost. Images on OSF. Box E31.

*Phyrama laticolle* Carl, 1914.

*littoralis aethiopica* Carl, 1916: 493 [*Thisiocentrus*].

One ♂ and one ♀ syntype. A ♂ specimen with labels: "Senegal, A Tournier" [handwritten on pink paper]; "littoralis aethiopicus" [handwritten on strip of white card]; "Heteracris (kein Thisiocentrus) aethiopicus Carl, Ramme det." [determination handwritten on white card with Ramme's name printed]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; all left legs are missing, as are the tarsi from all right legs, and most of both antennae. A ♀ specimen with labels: "Sénégal 8" [printed on strip of white paper]; "Syntypus" [printed on red paper]. This specimen is set with wings spread; the left front tarsi and most of both antennae are lost. Box Z74.

A junior synonym of *Heteracris littoralis* (Rambur, 1838).

*lombockensis* Carl, 1908a:136 [*Xestophrys*].

Holotype ♀ with labels: "Lombock, Sapit 5000', Mai-Juni 1896. H. Fruhstorfer" [printed on white card]; "Xestophrys lombockensis Carl" [handwritten on

yellow paper]; "Holotypus" [printed on red card]. The specimen is set with wings folded; the left hind leg lacks the tarsi. Images of type specimen on OSF. Box F4.

*Xestophrys javanicus lombockensis* Carl, 1908.

*longipennis* Carl, 1916: 470 [*Macroquilta*].

Holotype ♀ with labels: "Rockhampton, Nov. Holld. Océanie" [handwritten on white paper]; "Macroquilta longipennis Carl type!" [handwritten on lilac paper]; "Bermiella acuta Stål ♀ det. K.H.L. Key, 1958" [determination handwritten on white card with Key's name and date printed]; "Holotypus" [printed on red card]. The specimen is set with the right wings spread and left wings folded; the right middle leg, left hind leg tarsi and both antennae are missing. Box Z18.

A junior synonym of *Bermiella acuta* (Stål, 1878).

*macrocephalus* Carl, 1908a: 132 [*Eriolus*].

Holotype ♀ with labels: "Eriolus macrocephalus Carl" [handwritten on green paper]; "Eriolus macrocephalus Carl" [handwritten on white paper]; "Musée de Genève, No." [printed on white card]; "Holotypus" [printed on red card]. The species name label in the box has "Amérique cent." written in the bottom left corner (the description states that the specimen was from Costa Rica). The specimen is set with wings folded; the right antenna is lost. Images on OSF. Box F2.

*Erioloides macrocephalus* (Carl, 1908).

*macropterus* Carl, 1914a: 163 [*Polygamus*].

Holotype ♀ with labels: "H. de Saussure, Madagascar" [printed on white paper]; "Polygamus macropterus Carl" [handwritten on pink paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. This specimen is set with the right wings spread and left wings folded; the right front leg is lost. A card on the pin appears to have had an egg glued to it, but this is no longer attached. Images on OSF. Box B21b.

*Polygamus macropterus* Carl, 1914.

*malayana* Fritze in Carl, 1908b: 305 [*Gryllacris*].

One ♂ and one ♀ syntype. A ♂ with labels: "Nord-Borneo, ex coll. Fruhstorfer" [printed on white card]; "Syntypus" [printed on red paper]. This specimen is set with the right wings spread and left wings folded; most of both antennae are lost. A ♀ with labels: "Borneo" [printed on a strip of white card]; "Gryllacris spec. nov. (nicht fumigata?)" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen is set with the right wings spread and left wings folded; the tarsi are missing from the right middle leg, and the claws from the left middle and right front legs. Box N3.

*Gryllacris malayana* Fritze in Carl, 1908.

*marginata* Fritze in Carl, 1908b: 299 [*Psyra*].

A ♂ syntype with labels: "Psyra marginata (Fritze) Carl" [handwritten on white paper]; "Borneo" [printed on white card]; "Type" [printed on pink card]. The specimen

is set with the right wings spread and left wings folded; it has lost the tarsi of the front legs and the ends of the antennae. According to the original description the type series includes another male in the collection of Brunner von Wattenwyl. This is presumably the specimen in the Vienna Natural History Museum erroneously referred to as the holotype on OSF. Images on OSF. Box B15.

*Psyrana marginata* (Fritze in Carl, 1908).

*maxima* Carl, 1914a: 167 [*Trigonocorypha*].

Two ♂ and two ♀ syntypes. A ♂ with labels: “Madagasc. Sikora” [printed on pink paper]; “*Trigonocorypha maxima* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right front leg and most of both antennae are missing. A ♂ with labels: “Madagasc. Sikora” [printed on pink paper]; “*Trigonocorypha maxima* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the tarsi are missing from the left front and right middle leg, and both antennae are lost. A ♀ with labels: “Madagasc. Sikora” [printed on pink paper]; “*Trigonocorypha maxima* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; most of the right antenna is missing. A ♀ with labels: “H. de Saussure, Madagascar” [printed on white paper]; “*Trigonocorypha maxima* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the right wings spread and left wings folded; the right hind leg lacks the tarsi. According to the original description Carl had four female syntypes and it is not clear where the other two are deposited. Images on OSF. Box B22.

*Trigonocorypha maxima* Carl, 1914.

*minuta* Carl, 1916: 472 [*Oxya*].

Lectotype ♂ (designated by Hollis 1971: 269) with labels: “Zehntner, Java” [printed on yellow paper]; “*Oxya minuta* Carl” [handwritten on yellow paper]; “*Oxya minuta* Lectotype ♂, David Hollis det., 1969” [determination handwritten on white card with Hollis’ name printed]. This specimen lacks the left middle leg. The other ♂ and two ♀ specimens from the type series mentioned in the original description are present. Box Z18.

*Oxya minuta* Carl, 1916.

*mirabilis* Carl, 1916: 472 [*Tauchira*].

Eight ♂ and nine ♀ syntypes. All specimens have labels: “S. Celebes, Bua-Kraeng, 5000’ Febr. 1896, H Fruhstorfer” [printed on white card]; “*Tauchira mirabilis* Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. A ♂ with additional label: “Type” [printed on pink card], A ♂ lacking the left front leg. A ♂ lacking the left antenna. A ♂ lacking both antennae. A ♂ lacking the right antenna. A ♂ lacking the right front and left middle legs. A ♂ with additional labels: “*Tauchira mirabilis*” [handwritten on white card with black border]; “Cotype” [printed in red on

white card with red border]; “ex coll. Nadig - exotica” [printed on white paper]. This specimen has lost the right antenna. An intact ♂. A ♀ with additional label: “Type” [printed on pink card]. A ♀ lacking the left hind tarsi. A ♀ lacking all the legs on the left side, and the left antenna. A ♀ lacking the left hind leg. A ♀ lacking the left antenna. A ♀ lacking the tarsi of both front legs and the left antenna. A ♀ with the abdomen flattened and the colours faded. A ♀ with additional labels: “*Tauchira mirabilis*” [handwritten on white card with black border]; “Cotype” [printed in red on white card with red border]; “ex coll. Nadig - exotica” [printed on white paper]. This specimen lacks both antennae. An intact ♀. According to the original description the type series included another ♂ and ♀ example, it is not clear where these are deposited. Box Z19.

*Chitaura mirabilis* (Carl, 1916).

**modesta** Carl, 1914a: 161 [*Mimoscudderia*].

Two ♀ syntypes. A ♀ with labels: “H. de Saussure, Madagascar” [printed on white paper]; “*Mimoscudderia modesta* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the right wings spread and left wings folded; both front legs have been lost. A ♀ with labels: “Madagascar, H. de Saussure” [printed on white paper]; “*Mimoscudderia modesta* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen has the wings folded and has lost most of both antennae. Images on OSF. Box B21.

*Mimoscudderia modesta* Carl, 1914.

**multicolor** Carl, 1916: 512 [*Dellia*].

Two ♀ syntypes. A ♀ with labels: “Cuba, Mr H. de S.” [handwritten on white paper]; “*Dellia multicolor* Carl” [handwritten on green paper]; “*Dellia multicolor* Carl, Hololectoypus [sic] ♀ C S Carbonell 1966” [Carbonell’s handwriting on red card]. This specimen has lost the claw from the left middle leg and most of the left antenna. A ♀ with labels: “Cuba, Mr H. de S.” [handwritten on white paper]; “*Dellia multicolor* Carl” [handwritten on green paper]; “*Dellia multicolor* Carl, Paratypus C S C 1966” [Carbonell’s handwriting on red card]. Images on OSF. Box Z25.

*Dellia multicolor* Carl, 1916.

**musicus** Carl, 1914b: 554 [*Phyllomimus*].

Three ♂ and two ♀ syntypes. A ♂ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “*Phyllomimus musicus* Carl ♂” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right hind leg lacks the tarsi and most of the left antenna is missing. A ♂ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “*Phyllomimus musicus* Carl ♂” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has the wings folded and is pinned laterally through the side of the thorax. A ♂ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “*Phyllomimus musicus* Carl ♂” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has

the wings folded and is pinned laterally through the side of the thorax. A ♀ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “Phyllomimus musicus Carl ♀” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is set with the right wings spread and left wings folded; the left hind leg tarsi and most of the left antenna are missing. A ♀ with labels: “Tonkin, Cuisinier” [handwritten on yellow paper]; “Phyllomimus musicus Carl ♀” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is set with the wings slightly apart. Images on OSF. Box E7.

*Phyllomimus musicus* Carl, 1914.

*nobilis* Carl, 1914a: 158 [*Xenodoxus*].

One ♂ and one ♀ syntype. A ♂ with labels: “H. de Saussure, Madagascar” [printed on white paper]; “Xenodoxus nobilis Carl ♀” [handwritten on pink paper]; “Syntypus” [printed on red paper]. This specimen is set with the wings spread; it has lost the right middle leg. A ♀ with labels: “H. de Saussure, Madagascar” [printed on white paper]; “Xenodoxus nobilis Carl ♀” [handwritten on pink paper]; “Syntypus” [printed on red paper]. The specimen is set with the right wings spread and left wings folded; it has lost the right middle leg. Images on OSF. Box B18.

*Xenodoxus nobilis* Carl, 1914.

*notabilis* Carl, 1914b: 548 [*Parapsyra*].

Three ♀ syntypes. A ♀ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “Parapsyra notabilis Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the left front leg has lost the tibia and tarsi, the right front leg is missing, as are the ends of the antennae. A ♀ with labels: “Than-Moi, Tonkin, 2-3000’, IV.V, H.Rolle, Berlin SWH” [printed on white card]; “Parapsyra notabilis Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has the wings folded against the body, and has lost the ends of the antennae. A ♀ with labels: “Annam, Phuc-Son, Nov.-Dez., H. Fruhstorfer” [printed on white card]; “Parapsyra notabilis Carl” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is pinned laterally through the side of the thorax; the wings are folded against the body, and it has lost the ends of both antennae. Images on OSF. Box B14.

*Parapsyra notabilis* Carl, 1914

*oryzivorus* Carl, 1916: 480 [*Hieroglyphus*].

Lectotype ♀ (designated by Mason 1973: 534) with labels: “Murshidabad, 4293/8” [locality handwritten on hexagonal label with printed number]; “Hieroglyphus oryzivorus Carl ♀” [handwritten on yellow paper]; “Type” [printed on pink card]; “Hieroglyphus oryzivorus Carl, 1916, Lectotypus, J.B. Mason det., 1969” [determination handwritten on white card with Mason’s name and date printed]. This specimen is set with wings folded; most of the right antenna is lost. Another ♀ from the type series is present. Box Z19.

*Hieroglyphus oryzivorus* Carl, 1916.

*peloti* Carl, 1921: 302 [*Japygophana*].

Holotype ♂ with labels: “*Japygophana peloti* Carl, ♂ type, Gabon” [handwritten on white card]; “Holotypus” [printed on red card]. The specimen is set with the left wings spread and right wings folded; it has lost the tarsi of the front legs and the left middle leg, and part of both antennae. Images on OSF. Box B14.

*Japygophana peloti* Carl, 1921.

*peruviana* Carl, 1921: 306 [*Gnathoclita*].

Holotype ♂ with labels: “Chomhamayo Peru” [handwritten on strip of white card]; “*Gnathoclita peruviana* Carl” [handwritten on white paper]; “♂ Type” [printed on pink card]; “Holotypus” [printed on red card]. The specimen is set with the wings folded; it has lost most of the right front leg and the claws from the left front, middle and hind legs. Images on OSF. Box E23.

*Gnathoclita peruviana* Carl, 1921.

*picta* Carl, 1914a: 160 [*Mimoscudderia*].

One ♂ and one ♀ syntype. A ♂ with labels: “H. de Saussure, Madagascar” [printed on white paper]; “*Mimoscudderia picta* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded against the body; the right hind leg is detached and glued to the pink label, and most of the right antenna is missing. A ♀ with labels: “Saussure, Madagascar” [printed on white paper]; “*Mimoscudderia picta* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right hind leg lacks tibia and tarsi. Images on OSF. Box B21.

*Mimoscudderia picta* Carl, 1914.

*picta* Carl, 1908a: 149 [*Yorikiella*].

Holotype ♂ with labels: “*Yorikiella picta* Carl, Cap York (Australie)” [handwritten on lilac paper]; “Holotypus” [printed on red card]. The specimen is set with wings folded; it has been repaired at some time using a pin inserted at the rear of the abdomen to hold the latter to the thorax, the right hind leg is lost, the femur of the left hind leg has been glued to the abdomen, the tarsi of the left front leg are missing, as is the right antenna. Images on OSF. Box F25.

A junior synonym of *Chlorobalius leucoviridis* Tepper, 1896.

*pigra* Carl, 1916: 492 [*Parallaga*].

Holotype ♂ with labels: “Madagascar, Grandid” [printed on white paper]; “*Parallaga pigra* Carl ♂ type” [handwritten on pink paper]; “Holotypus” [printed on red card]. The right antenna is detached and glued to the pink label. Box Z55.

*Sauracris pigra* (Carl, 1916).

*polita* Carl, 1914a: 156 [*Neoscirtella*].

Holotype ♀ with labels: “Madagasc. Sikora” [printed on pink paper]; “*Neoscirtella polita* Carl, ♀ type” [handwritten on pink paper]; “Holotypus” [printed

on red card]. The specimen is set with the left wings spread and right wings folded; it has lost the tibia and tarsi of the left middle and right hind legs, and most of the antennae. Images on OSF. Box B9.

*Neoscirtella polita* Carl, 1914.

*praestans* Carl, 1916: 500 [*Thisiocentrus*].

Lectotype ♂ (designated by Dirsh, 1962: 319) with labels: “Antongil, Madagascar, Brunner det” [details handwritten on white card with Madagascar printed]; “*Thisiocentrus praestans* Carl” [handwritten on pink paper]; “vermutlich = *Thisiocentrus finoti* I. Bol. Ramme det.” [determination handwritten on white card with Ramme’s name printed]; “*Thisiocentrus praestans* Carl. Type! = *Heteracris nobilis* (Brancs.) V.M. Dirsh. Det. 1958” [determination handwritten on white card with Dirsh’s name and the date printed]; “Type” [printed on card disc with red margin]; “Lectotypus” [printed on red card]. This specimen is set with left wings spread and right wings folded; it has lost the left front leg, both middle legs and the right hind leg, the right front leg tibia and tarsi are missing, as are both antennae. The female specimen from the type series is present. Box Z75.

A junior synonym of *Heteracris finoti* (Bolivar, 1914).

*profundesulcata* Carl, 1916: 464 [*Monistria*].

Holotype ♀ with labels: “Australie” [handwritten on lilac paper]; “*Monistria profundisulca* Carl” [handwritten on lilac paper]; “Holotype of *Monistria profundesulca* Carl 1916” [handwritten on white card]; “Holotypus” [printed on red card]. The specimen has lost the right front leg and the tip of the left antenna. Box X7.

*Greyacris profundesulcata* (Carl, 1916).

*punctipennis* Carl, 1914a: 162 [*Polygamus*].

One ♂ and two ♀ syntypes. A ♂ with labels: “*Polygamus punctipennis* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the left front leg lacks the tarsi and the right front leg is missing, as is most of both antennae. A ♀ with labels: “Saussure, Madagasc.” [printed on white paper]; “*Polygamus punctipennis* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen has the wings folded against the body; the left front leg lacks tibia and tarsi. Five eggs are glued to a card on the pin. A ♀ with labels: “Saussure, Madagasc.” [printed on white paper]; “*Polygamus punctipennis* Carl” [handwritten on pink paper]; “Type” [printed on pink card]; “Syntypus” [printed on red paper]. This specimen has the wings folded; the right middle leg is missing. According to the original description Carl had four female syntypes and it is not clear where the other two are deposited. Images on OSF. Box B21b.

*Polygamus punctipennis* Carl, 1914.

*quadrituberculata* Fritze in Carl, 1908b: 301 [*Mortonia*].

Holotype ♂ with labels: “Ceylan” [printed on a strip of white card]; “W. Morton, Ceylan” [name printed, locality handwritten on white card]; “*Mortonia*



quadrituberculata (Fritze) Carl" [handwritten on white paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The specimen is set with the right wings spread and left wings folded; the left front leg lacks tibia and tarsi, the right middle and hind legs are missing and the left hind leg lacks the tarsi. Images on OSF. Box D5.

*Aulocrania quadrituberculata* (Fritze in Carl, 1908).

*relicta* Carl, 1914a:172 [*Paraphylloptera*].

Holotype ♀ with labels: "Nosi-bé" [handwritten on strip of white card]; "Paraphylloptera relicta Carl, ♀ type" [handwritten on pink paper]; "Holotypus" [printed on red card]. This specimen is set with the right wings spread and left wings folded; the right hind leg is missing, as are the tarsi of the front and middle legs. Images on OSF. Box B33.

*Paraphylloptera relicta* Carl, 1914.

*samanga* Carl, 1916: 474 [*Tauchira*].

Holotype ♂ with labels: "Samanga, S. Celebes, Nov. 1895, H. Fruhstorfer" [printed on white card]; *Tauchira samanga* Carl ♂" [handwritten on yellow paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The specimen has lost both front legs, the right middle leg and both antennae. Box Z19.

*Chitaura samanga* (Carl, 1916).

*saussurei* Carl, 1916: 510 [*Arnilia*].

Lectotype ♂ (designated by Roberts, 1978: 61) with labels: "Cayenne" [printed on strip of green paper]; "Arnilia saussurei Carl" [handwritten on green paper]; "Arnilia saussurei Carl, Hololectotypus [*sic*] ♂, C S Carbonell 1966" [Carbonell's handwriting on red card]. This specimen is set with wings folded. A further seven ♂ and 12 ♀ from the type series are present. Images on OSF. Box Z24.

A junior synonym of *Stenacris xanthochlora* (Marschall, 1836).

*saussurei* Carl, 1914a: 176 [*Parasimodera*].

Holotype ♀ with labels: "Antongil, Madagascar, Brunner det" [handwritten on white card]; "Parasimodera saussurei Carl type" [handwritten on pink paper]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The specimen is set with the left wings spread and right wings folded. Images on OSF. Box E31.

*Parasimodera saussurei* Carl, 1914.

*sondaica* Carl, 1921: 303 [*Psyra*].

Three ♂ and four ♀ syntypes. A ♂ with labels: "Java" [printed on white card]; "Psyra sondaica Carl" [handwritten on yellow paper]; "Type" [printed on pink card]. This specimen is set with wings spread and lacks the ends of both antennae.

A ♂ with labels: "Psyra sondaica Carl" [handwritten on yellow paper]; "Co-type" [printed on white card]. This specimen is in poor condition, and has been repaired at some time using a pin inserted between head and prothorax and emerging above the genitalia. The right front tibia and tarsi are missing, as are the left front leg and both middle legs, the left hind tarsi and both antennae. A ♂ with labels: "Sumatra,

W. Morton" [printed on white card]; "Psyra sondaica Carl, ♂ var." [handwritten on yellow paper]; "Co-type" [printed on white card]. This specimen has the wings folded; the left hind leg is detached. A ♀ with labels: "Java" [printed on yellow paper]; "Psyra sondaica Carl" [handwritten on yellow paper]; "Type" [printed on pink card]. This specimen has the wings folded, the left hind tibia is broken and the lower half glued to the yellow label. The ends of both antennae are missing. A ♀ with labels: "Sumatra, W. Morton" [printed on white card]; "Psyra sondaica Carl" [handwritten on yellow paper]; "Co-type" [printed on white card]. This specimen has the wings folded and has lost the right front leg and most of both antennae. A ♀ with labels: "Sumatra, W. Morton" [printed on white card]; "Psyra sondaica Carl" [handwritten on yellow paper]; "Co-type" [printed on white card]. This specimen is set with the left wings set and the right wings folded; the tip of the left antenna and the whole of the right antenna are lost. A ♀ with labels: "Psyra sondaica Carl" [handwritten on yellow paper]; "Co-type" [printed on white card]. This specimen has the wings folded, and has lost the tarsi of the left front leg and most of both antennae. The male from Java is said to be the lectotype on OSF, but this designation has apparently not been published. Images on OSF. Box B15.

*Psyra sondaica* (Carl, 1921).

*sordida* Fritze in Carl, 1908b: 303 [*Gryllacris*].

Holotype ♀ with labels: "Borneo" [printed on strip of white card]; "Gryllacris sordida Fritze, type, Borneo coll. Morton" [handwritten on white card]; "Holotypus" [printed on red card]. The specimen is set with the right wings spread and left wings folded; the right front leg tarsi and the right antenna are missing. Box N3.

*Eugryllacris sordida* (Fritze in Carl, 1908).

*spinipes* Fritze in Carl, 1908b: 302 [*Odontoconus*].

Holotype ♀ with labels: "Borneo" [printed on strip of white card]; "Odontoconus spinipes (Fritze) Carl" [handwritten on white card]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The species name label in the insect box has "W. Morton" written in the bottom right corner, indicating that he collected the specimen. The specimen is set with the right wings spread and left wings folded; the tarsi of the left front leg and both middle legs are missing, as is the left antenna. Images on OSF. Box F19.

*Odontoconus spinipes* Fritze in Carl, 1908.

*sumatrensis* Fritze, 1899: 339 [*Coptacra*].

Two ♀ syntypes. A ♀ with labels: "Deli, Sumatra, C. Pictet" [printed on yellow paper]; "Coptacra sumatrensis Fritze (Type)" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen is set with the left wings spread and right wings folded; the right middle leg is missing. A ♀ with labels: "Deli, Sumatra, C. Pictet" [printed on yellow paper]; "Coptacra sumatrensis Fritze (Type)" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. The specimen is set with the wings folded. Box Z50.

A junior synonym of *Apalacris cingulatipes* (Bolivar, 1898).

*tonkinensis* Carl, 1916: 479 [*Hieroglyphus*].

Holotype ♀ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Hieroglyphicus tonkinensis Carl ♀" [handwritten on yellow paper]; "Type" [printed on pink card]; "Hieroglyphus annulicornis (Shir.) J.B. Mason det. 1969" [determination handwritten on white card with Mason's name and date printed]; "Holotypus" [printed on red card]. The specimen is set with wings folded; most of the right antenna is lost. Box Z19.

A junior synonym of *Hieroglyphus annulicornis* (Shiraki, 1910).

*tonkinensis* Carl, 1914b: 544 [*Isopsera*].

Two ♂ and one ♀ syntype. A ♂ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Isopsera tonkinensis Carl, type!" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen is pinned laterally through the side of the thorax, with the wings folded. A ♂ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Isopsera tonkinensis Carl, type!" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen is pinned laterally through the side of the thorax, with the wings folded; it has lost both front legs. A ♀ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Isopsera tonkinensis Carl, type!" [handwritten on yellow paper]; "Syntypus" [printed on red paper]. This specimen is pinned laterally through the side of the thorax, with the wings folded; it has lost the left middle leg. Images on OSF. Box B19.

*Isopsera tonkinensis* Carl, 1914.

*uncinata* Carl, 1908a: 143 [*Salomona*].

Holotype ♂ with labels: "Salomona uncinata Carl, Samoa Isl. ♂" [handwritten on lilac paper]; "Salomona uncinata Carl Det. C. Willemse 1958" [determination handwritten on white card with Willemse's name and the date printed]; "Holotypus" [printed on red card]. The specimen is set with the left wings spread and right wings folded; the left front leg is lost, as are the tarsi of the right hind leg. Images on OSF. Box F18.

*Salomona uncinata* Carl, 1908.

*vastator* Carl, 1916: 481 [*Hieroglyphicus*].

Holotype ♂ with labels: "Indes Orient." [handwritten on a strip of yellow paper]; "cette espèce causerait les ravages" [handwritten on yellow paper]; "Hieroglyphus vastator Carl ♂" [handwritten on yellow paper]; "Hieroglyphus nigrorepletus Bol., J.B. Mason det. 1969" [determination handwritten on white card with Mason's name and the date printed]; "Type" [printed on pink card]; "Holotypus" [printed on red card]. The specimen is set with wings folded; both middle legs and both antennae are lost. Box Z19.

A junior synonym of *Hieroglyphus nigrorepletus* Bolivar, 1912.

*venusta* Carl, 1914b: 551 [*Holochlora*].

Holotype ♂ with labels: "Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer" [printed on white card]; "Holochlora venusta Carl, ♂ type" [handwritten on yellow paper];

“Holotypus” [printed on red card]. The specimen is set with the left wings spread and right wings folded; it has lost the tarsi of both middle legs and most of both antennae. Images on OSF. Box B17.

*Holochlora venusta* Carl, 1914.

*verrucivorus deliae* Fritze, 1918: 11 [*Decticus*].

The types of this subspecies are presumably still in Hanover.

*Decticus verrucivorus deliae* Fritze, 1918.

*vespertilio* Carl, 1914a: 165 [*Cosmozoma*].

Holotype ♂ with labels: “Most likely the holotype of *Cosmozoma vespertilio* Carl, 1914, original labels missing! P. Naskrecki July 2002” [handwritten on white paper]; “Holotypus” [printed on red card]. The specimen is set with the wings spread; it has lost the tibia and tarsi of the right hind leg and the entire left hind leg. Although any labels originally on the pin have been lost, the species name label in the insect box indicates “Madagascar” in Carl’s handwriting, and is uniform with the labels for the other Carl species in this box (these having retained their labels), and there is no doubt that this is the type. Images on OSF. Box B21b.

*Conchotopoda vespertilio* (Carl, 1914).

*vidua* Carl, 1916: 475 [*Tauchira*].

Holotype ♀ with labels: “S. Celebes, Patuhuang, Jan. 1896, H. Fruhstorfer” [printed on white card]; “*Tauchira vidua* Carl ♀” [handwritten on yellow paper]; “Type” [printed on pink card]; “Holotypus” [printed on red card]. The left hind leg is missing. Box Z19.

*Chitava vidua* (Carl, 1916).

*vidua* Carl, 1921: 307 [*Yorkiella*].

Holotype ♀ with labels: “*Yorkiella vidua* Carl, ♀ type, Cairns, Queensland” [handwritten on white paper]; “Holotypus” [printed on red card]. The specimen is set with the wings folded; the left middle leg and the right middle and hind legs are missing, as are the left hind tarsi. Images on OSF. Box F25.

A junior synonym of *Chlorobalius leucoviridis* Tepper, 1896.

*vinosa* Carl, 1916: 463 [*Monistria*].

Holotype ♂ with labels: “Kosciusko, N.S.W. 6000 ft, Helms III.89” [handwritten on whitish card]; “Mus. Sidney” [printed on strip of white paper]; “*Monistria vinosa* Carl” [handwritten on lilac paper]; “Holotype of *Monistria vinosa* Carl 1916” [handwritten on white card]; “*Monistria vinosa* ♂, *vinosa* Carl det. K.H.L. Key, 1958” [handwritten on white card with Key’s name and the date printed]; “Holotypus” [printed on red card]. Box X7.

A junior synonym of *Monistria concinna* (Walker, 1871).

*virilis* Carl, 1914a: 170 [*Parapyrrhicia*].

Holotype ♂ with labels: “Antongil, Madagascar” [first word handwritten, second printed on white card]; “*Parapyrrhicia virilis* Carl, ♂ type” [handwritten on

pink paper]; “Holotypus” [printed on red card]. This specimen is set with wings folded; the left front leg is detached, the right middle and hind legs are lost, and most of the right antenna is lost. Images on OSF. Box B31.

*Parapyrrhicia virilis* Carl, 1914.

*voluptaria* Carl, 1914b: 549 [*Holochlora*].

Two ♂ and one ♀ syntype. A ♂ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “*Holochlora voluptaria* Carl, ♂ type” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. The specimen is set with the left wings spread and right wings folded; it has lost the left front leg and most of both antennae. A ♂ with labels: “Tonkin, Than-Moi, Juni-Juli, H. Fruhstorfer” [printed on white card]; “*Holochlora voluptaria* Carl, ♂ type” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen is pinned laterally through the side of the thorax, with the wings folded; it has lost both front legs and most of both antennae. A ♀ with labels: “Than-Moi, Tonkin, 2-3000”, IV.V, H.Rolle, Berlin SWH” [printed on white card]; “*Holochlora voluptaria* Carl, ♀ type” [handwritten on yellow paper]; “Syntypus” [printed on red paper]. This specimen has the wings folded, and has lost most of both antennae. Images on OSF. Box B17.

*Sinochlora voluptaria* (Carl, 1914).

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